

CLAIMS:

What is claimed is:

- 1 1. A method in a data processing system for managing
2 traffic in a network data processing system, the method
3 comprising:
4 monitoring traffic for a plurality of network paths;
5 and
6 responsive to a packet for a particular network path
7 within the plurality of network paths causing traffic for
8 the particular network path to exceed a level of traffic
9 allowed, reducing an amount of bandwidth available based on
10 a fair share for the particular network path.

1 2. The method of claim 1, wherein the traffic is measured
2 using at least one of a data transfer rate, peak data
3 transfer rate, burst size, and maximum packet size.

1 3. The method of claim 1, wherein the reducing step
2 comprises:
3 reducing a congestion window size.

1 4. The method of claim 3, wherein the congestion window
2 size is reduced as follows:

3
$$CW = \max(\text{MinW}, \min(CW * F, \text{MaxW}))$$

4 wherein CW is the congestion window size, MinW is a minimum
5 congestion window size for the particular network path,
6 MaxW is a maximum congestion window size for the particular
7 network path, F is a fraction to cut the congestion window
8 size for the particular network path.

1 5. The method of claim 1, wherein the reducing step
2 comprises:

3 setting a type of service for packets sent using the
4 particular network path.

1 6. The method of claim 1, wherein the reducing step
2 comprises:

3 dropping the packet.

1 7. A method in a data processing system for managing
2 traffic in a network data processing system, the method
3 comprising:

4 monitoring aggregate traffic for each of a plurality
5 of network paths; and

1 responsive to aggregate traffic for a selected network
2 path exceeding a threshold, reducing the aggregate traffic
3 for the selected network path.

1 8. The method of claim 7, wherein the aggregate traffic
2 includes at least one of a data transfer rate, peak data
3 transfer rate, burst size, and maximum packet size.

1 9. The method of claim 7, wherein the reducing step
2 comprises:
3 reducing a congestion window size.

1 10. The method of claim 7, wherein the reducing step
2 comprises:
3 reducing a sending size for data packets.

1 11. The method of claim 7, wherein the reducing step
2 comprises:
3 changing a type of server for data packets for the
4 selected network path.

1 12. The method of claim 7, wherein the threshold takes
2 into account a fair share of bandwidth available for the
3 plurality of network paths.

1 13. A data processing system comprising:
2 a bus system;
3 a communications unit connected to the bus, wherein
4 data is sent and received using the communications unit;
5 a memory connected to the bus system, wherein a set of
6 instructions are located in the memory; and
7 a processor unit connected to the bus system, wherein
8 the processor unit executes the set of instructions to
9 monitor traffic for a plurality of network paths; and
10 reduce an amount of bandwidth available based on a fair
11 share for the particular network path in response to a
12 packet for a particular network path within the plurality
13 of network paths causing traffic for the particular network
14 path to exceed a level of traffic allowed.

1 14. The data processing system of claim 13, wherein the
2 bus system includes a primary bus and a secondary bus.

1 15. The data processing system of claim 13, wherein the
2 processor unit includes a single processor.

1 16. The data processing system of claim 13, wherein the
2 processor unit includes a plurality of processors.

1 17. The data processing system claim 13, wherein the
2 communications unit is an Ethernet adapter.

1 18. A data processing system comprising:
2 a bus system;
3 a communications unit connected to the bus, wherein
4 data is sent and received using the communications unit;
5 a memory connected to the bus system, wherein a set of
6 instructions are located in the memory; and
7 a processor unit connected to the bus system, wherein
8 the processor unit executes the set of instructions to
9 monitor aggregate traffic for each of a plurality of
10 network paths; and reduce the aggregate traffic for the
11 selected network path in response to aggregate traffic for
12 a selected network path exceeding a threshold.

1 19. The data processing system of claim 18, wherein the
2 bus system includes a primary bus and a secondary bus.

1 20. The data processing system of claim 18, wherein the
2 processor unit includes a single processor.

1 21. The data processing system of claim 18, wherein the
2 processor unit includes a plurality of processors.

1 22. The data processing system claim 18, wherein the
2 communications unit is an Ethernet adapter.

1 23. A data processing system for managing traffic in a
2 network data processing system, the data processing system
3 comprising:

4 monitoring means for monitoring traffic for a
5 plurality of network paths; and

6 reducing means, responsive to a packet for a
7 particular network path within the plurality of network
8 paths causing traffic for the particular network path to
9 exceed a level of traffic allowed, for reducing an amount
10 of bandwidth available based on a fair share for the
11 particular network path.

1 24. The data processing system of claim 23, wherein the
2 traffic is measured using at least one of a data transfer
3 rate, peak data transfer rate, burst size, and maximum
4 packet size.

1 25. The data processing system of claim 23, wherein the
2 reducing means comprises:

3 means for reducing a congestion window size.

1 26. The data processing system of claim 25, wherein the
2 congestion window size is reduced as follows:

3
$$CW = \max(\text{MinW}, \min(CW * F, \text{MaxW}))$$

4 wherein CW is the congestion window size, MinW is a minimum
5 congestion window size for the particular network path,
6 MaxW is a maximum congestion window size for the particular
7 network path, F is a fraction to cut the congestion window
8 size for the particular network path.

1 27. The data processing system of claim 23, wherein the
2 reducing means comprises:

3 setting means for setting a type of service for
4 packets sent using the particular network path.

1 28. The data processing system of claim 23, wherein the
2 reducing means comprises:

3 dropping means for dropping the packet.

1 29. A data processing system for managing traffic in a
2 network data processing system, the data processing system
3 comprising:

4 monitoring means for monitoring aggregate traffic for
5 each of a plurality of network paths; and

6 reducing means, responsive to aggregate traffic for a
7 selected network path exceeding a threshold, for reducing
8 the aggregate traffic for the selected network path.

1 30. The data processing system of claim 29, wherein the
2 aggregate traffic includes at least one of a data transfer
3 rate, peak data transfer rate, burst size, and maximum
4 packet size.

1 31. The data processing system of claim 29, wherein the
2 reducing means comprises:

3 means for reducing a congestion window size.

1 32. The data processing system of claim 29, wherein the
2 reducing means comprises:

3 means for reducing a sending size for data packets.

1 33. The data processing system of claim 29, wherein the
2 reducing means comprises changing a type of server for data
3 packets for the selected network path.

1 34. The data processing system of claim 29, wherein the
2 threshold takes into account a fair share of bandwidth
3 available for the plurality of network paths.

1 35. A computer program product in a computer readable
2 medium for managing traffic in a network data processing
3 system, the computer program product comprising:

4 first instructions for monitoring traffic for a
5 plurality of network paths;

6 second instructions, responsive a packet for a
7 particular network path within the plurality of network
8 paths causing traffic for the particular network path to
9 exceed a level of traffic allowed, for reducing an amount
10 of bandwidth available based on a fair share for the
11 particular network path.

1 36. The computer program product of claim 35, wherein the
2 traffic is measured using at least one of a data transfer
3 rate, peak data transfer rate, burst size, and maximum
4 packet size.

1 37. The computer program product of claim 35, wherein the
2 reducing step comprises:

3 third instructions for reducing a congestion window
4 size.

1 38. The computer program product of claim 37, wherein the
2 congestion window size is reduced as follows:

3
$$CW = \max(\text{MinW}, \min(CW * F, \text{MaxW}))$$

4 wherein CW is the congestion window size, MinW is a minimum
5 congestion window size for the particular network path,
6 MaxW is a maximum congestion window size for the particular
7 network path, F is a fraction to cut the congestion window
8 size for the particular network path.

1 39. The computer program product of claim 35, wherein the
2 second instructions comprises:

3 instructions for setting a type of service for packets
4 sent using the particular network path.

1 40. The computer program product of claim 35, wherein the
2 second instructions comprises:

3 instructions for dropping the packet.

1 41. A computer program product in a computer readable
2 medium for managing traffic in a network data processing
3 system, the computer program product comprising:

4 first instructions for monitoring aggregate traffic
5 for each of a plurality of network paths; and

6 second instructions, responsive to aggregate traffic
7 for a selected network path exceeding a threshold, for
8 reducing the aggregate traffic for the selected network
9 path.

1 42. The computer program product of claim 41, wherein the
2 aggregate traffic includes at least one of a data transfer
3 rate, peak data transfer rate, burst size, and maximum
4 packet size.

1 43. The computer program product of claim 41, wherein the
2 second instructions comprises:

3 instructions for reducing a congestion window size.

1 44. The computer program product of claim 41, wherein the
2 second instructions comprises:

3 instructions for reducing a sending size for data
4 packets.

1 45. The computer program product of claim 41, wherein the
2 second instructions comprises:

3 instructions for changing a type of server for data
4 packets for the selected network path.

1 46. The computer program product of claim 41, wherein the
2 threshold takes into account a fair share of bandwidth
3 available for the plurality of network paths.